STAAR® Alternate 2

State of Texas
Assessments of
Academic Readiness
——Alternate 2——

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TEKS Curriculum Framework for STAAR Alternate 2

Algebra I

STAAR Alternate 2 Mathematics Instructional Terms

The curriculum that will be assessed each year for STAAR Alternate 2 is determined by the essence statements that are selected for each administration. Teachers should refer to the Curriculum Framework documents for each selected essence statement to locate the prerequisite skills that are linked to that essence statement. Instruction should focus on the listed prerequisite skills. The teacher should determine what skills have been mastered and which need to be taught according to the developmental level of the student. The goal should be to assist the student in attaining the highest academic level the student is capable of within a given year. In addition to the prerequisite skills, there are instructional terms that students will need exposure to during instruction. This list does not encompass all the curriculum a student would be responsible for; it is a unique list of instructional terms developed by educator teams. Students need to become familiar with these terms as the student is developmentally able to comprehend the content. Students in higher grades need to also know the terms presented in earlier grades.

Grade 3 Mathematics

addition	attributes of geometric figures: sides, faces	chart	compare
divide	fraction: whole, half, separate, equal	graph: category, label, row, column	model
next to/after/before/between	number pair	number sentence	odd/even
order: least to greatest	pattern	penny, nickel, dime, quarter	plus
record/data	set/group	total	shapes: circle, rectangle, square, triangle

Grade 4 Mathematics

amount	equation	fractions: shaded parts of a whole, halves, fourths, fraction models	length
less than	minus	most/least	number line
pictograph			

Grade 5 Mathematics

deposit/withdrawal/balance	longer	numerator/denominator	saves/spends
unit			

Grade 6 Mathematics

area, area model, and formula for area of a rectangle (length x width)	bar graph	decimal point	equivalent fractions
expanded form	represent	square inch	

Grade 7 Mathematics

attributes of geometric figures: bases	cube	cylinder	fewer
sum/difference	*x*-axis	*y*-axis	

Grade 8 Mathematics

coordinate grid	line graph	location	multiplication
per	symmetry	tally marks/frequency table	

Algebra I

doubled	factor	operations	recycled
results	simplified/simplified form	square feet	

STAAR Reporting Category 1 – Number and Algebraic Methods: **The student will demonstrate an understanding of how to use algebraic methods to manipulate numbers, expressions, and equations.**

TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations	Essence of TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations
Algebra (10) Number and algebraic methods. The student applies the mathematical process standards and algebraic methods to rewrite in equivalent forms and perform operations on polynomial expressions. The student is expected to (A) add and subtract polynomials of degree one and degree two; Supporting Standard (B) multiply polynomials of degree one and degree two; Supporting Standard (C) determine the quotient of a polynomial of degree one and polynomial of degree two when divided by a polynomial of degree one and polynomial of degree two when the degree of the divisor does not exceed the degree of the dividend; Supporting Standard (D) rewrite polynomial expressions of degree one and degree two in equivalent forms using the distributive property; Supporting Standard (E) factor, if possible, trinomials with real factors in the form $ax^2 + bx + c$, including perfect square trinomials of degree two; Readiness Standard (F) decide if a binomial can be written as the difference of two squares and, if possible, use the structure of a difference of two squares to rewrite the binomial. Supporting Standard	Determines different forms of expressions using operations or properties.

Algebra 10	**Prerequisite Skills/Links to TEKS Vertical Alignment**

Determining and Simplifying Numeric and Algebraic Expressions
- convert between standard decimal notation and scientific notation
- extend previous knowledge of sets and subsets using a visual representation to describe relationships between sets of real numbers
- extend previous knowledge of sets and subsets using a visual representation to describe relationships between sets of rational numbers
- generate equivalent expressions using the properties of operations: inverse, identity, commutative, associative, and distributive properties

Continued

Algebra 10	Prerequisite Skills/Links to TEKS Vertical Alignment
	• determine if two expressions are equivalent using concrete models, pictorial models, and algebraic representations • distinguish between expressions and equations verbally, numerically, and algebraically • generate equivalent numerical expressions using order of operations, including whole number exponents and prime factorization • simplify numerical expressions that do not involve exponents, including up to two levels of grouping • describe the meaning of parentheses and brackets in a numeric expression • represent the value of the digit in decimals through the thousandths using expanded notation and numerals • represent the value of the digit in whole numbers through 1,000,000,000 and decimals to the hundredths using expanded notation and numerals • interpret the value of each place-value position as 10 times the position to the right and as one-tenth of the value of the place to its left • describe the mathematical relationships found in the base-10 place value system through the hundred thousands place • compose and decompose numbers up to 100,000 as a sum of so many ten thousands, so many thousands, so many hundreds, so many tens, and so many ones using objects, pictorial models, and numbers, including expanded notation as appropriate • use standard, word, and expanded forms to represent numbers up to 1,200 • use concrete and pictorial models to compose and decompose numbers up to 1,200 in more than one way as a sum of so many thousands, hundreds, tens, and ones • apply properties of operations to add and subtract two or three numbers • use objects, pictures, and expanded and standard forms to represent numbers up to 120 • use concrete and pictorial models to compose and decompose numbers up to 120 in more than one way as so many hundreds, so many tens, and so many ones • compose and decompose numbers up to 10 with objects and pictures

NOTE: Under each heading the prerequisite skills are arranged from the highest grade level to the lowest grade level.

STAAR Reporting Category 1 – Number and Algebraic Methods: The student will demonstrate an understanding of how to use algebraic methods to manipulate numbers, expressions, and equations.

TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations	Essence of TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations
Algebra (11) Number and algebraic methods. The student applies the mathematical process standards and algebraic methods to rewrite algebraic expressions into equivalent forms. The student is expected to (A) simplify numerical radical expressions involving square roots; Supporting Standard (B) simplify numeric and algebraic expressions using the laws of exponents, including integral and rational exponents. Readiness Standard	Simplifies expressions.

Algebra 11	Prerequisite Skills/Links to TEKS Vertical Alignment

Determining and Simplifying Numeric and Algebraic Expressions
- convert between standard decimal notation and scientific notation
- extend previous knowledge of sets and subsets using a visual representation to describe relationships between sets of real numbers
- extend previous knowledge of sets and subsets using a visual representation to describe relationships between sets of rational numbers
- generate equivalent expressions using the properties of operations: inverse, identity, commutative, associative, and distributive properties
- determine if two expressions are equivalent using concrete models, pictorial models, and algebraic representations
- distinguish between expressions and equations verbally, numerically, and algebraically
- generate equivalent numerical expressions using order of operations, including whole number exponents and prime factorization
- simplify numerical expressions that do not involve exponents, including up to two levels of grouping
- describe the meaning of parentheses and brackets in a numeric expression
- represent the value of the digit in decimals through the thousandths using expanded notation and numerals
- represent the value of the digit in whole numbers through 1,000,000,000 and decimals to the hundredths using expanded notation and numerals
- interpret the value of each place-value position as 10 times the position to the right and as one-tenth of the value of the place to its left
- describe the mathematical relationships found in the base-10 place value system through the hundred thousands place
- compose and decompose numbers up to 100,000 as a sum of so many ten thousands, so many thousands, so many hundreds, so many tens, and so many ones using objects, pictorial models, and numbers, including expanded notation as appropriate

Continued

Algebra 11	Prerequisite Skills/Links to TEKS Vertical Alignment
	- use standard, word, and expanded forms to represent numbers up to 1,200 - use concrete and pictorial models to compose and decompose numbers up to 1,200 in more than one way as a sum of so many thousands, hundreds, tens, and ones - apply properties of operations to add and subtract two or three numbers - use objects, pictures, and expanded and standard forms to represent numbers up to 120 - use concrete and pictorial models to compose and decompose numbers up to 120 in more than one way as so many hundreds, so many tens, and so many ones - compose and decompose numbers up to 10 with objects and pictures

NOTE: Under each heading the prerequisite skills are arranged from the highest grade level to the lowest grade level.

STAAR Reporting Category 1 – Number and Algebraic Methods: The student will demonstrate an understanding of how to use algebraic methods to manipulate numbers, expressions, and equations.

TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations	Essence of TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations
Algebra (12) Number and algebraic methods. The student applies the mathematical process standards and algebraic methods to write, solve, analyze, and evaluate equations, relations, and functions. The student is expected to (A) decide whether relations represented verbally, tabularly, graphically, and symbolically define a function; Supporting Standard (B) evaluate functions, expressed in function notation, given one or more elements in their domains; Supporting Standard (C) identify terms of arithmetic and geometric sequences when the sequences are given in function form using recursive processes; Supporting Standard (D) write a formula for the nth term of arithmetic and geometric sequences, given the value of several of their terms; Supporting Standard (E) solve mathematic and scientific formulas, and other literal equations, for a specified variable. Supporting Standard	Finds values for or identifies functions, sequences, or formulas.

Algebra 12	Prerequisite Skills/Links to TEKS Vertical Alignment

Representing and Solving Algebraic Relationships
- identify and verify the values of x and y that simultaneously satisfy two linear equations in the form $y = mx + b$ from the intersections of the graphed equations
- model and solve one-variable equations with variables on both sides of the equal sign that represent mathematical and real-world problems using rational number coefficients and constants
- write a corresponding real-world problem when given a one-variable equation or inequality with variables on both sides of the equal sign using rational number coefficients and constants
- write one-variable equations or inequalities with variables on both sides that represent problems using rational number coefficients and constants
- write an equation in the form $y = mx + b$ to model a linear relationship between two quantities using verbal, numerical, tabular, and graphical representations
- identify examples of proportional and non-proportional functions that arise from mathematical and real-world problems
- identify functions using sets of ordered pairs, tables, mappings, and graphs

Continued

Algebra 12	**Prerequisite Skills/Links to TEKS Vertical Alignment**
	• distinguish between proportional and non-proportional situations using tables, graphs, and equations in the form $y = kx$ or $y = mx + b$, where $b \neq 0$
	• solve problems involving direct variation
	• represent linear non-proportional situations with tables, graphs, and equations in the form of $y = mx + b$, where $b \neq 0$
	• represent linear proportional situations with tables, graphs, and equations in the form of $y = kx$
	• use data from a table or graph to determine the rate of change or slope and y-intercept in mathematical and real-world problems
	• graph proportional relationships, interpreting the unit rate as the slope of the line that models the relationship
	• use similar right triangles to develop an understanding that slope, m, given as the rate comparing the change in y-values to the change in x-values, $(y_2 - y_1)/(x_2 - x_1)$, is the same for any two points (x_1, y_1) and (x_2, y_2) on the same line
	• determine if the given value(s) make(s) one-variable, two-step equations and inequalities true
	• model and solve one-variable, two-step equations and inequalities
	• write a corresponding real-world problem given a one-variable, two-step equation or inequality
	• represent solutions for one-variable, two-step equations and inequalities on number lines
	• write one-variable, two-step equations and inequalities to represent constraints or conditions within problems
	• represent linear relationships using verbal descriptions, tables, graphs, and equations that simplify to the form $y = mx + b$
	• solve problems involving ratios, rates, and percents, including multi-step problems involving percent increase and percent decrease, and financial literacy problems
	• determine the constant of proportionality $(k = y/x)$ within mathematical and real-world problems
	• calculate unit rates from rates in mathematical and real-world problems
	• represent constant rates of change in mathematical and real-world problems given pictorial, tabular, verbal, numeric, graphical, and algebraic representations, including $d = rt$
	• determine if the given value(s) make(s) one-variable, one-step equations or inequalities true
	• model and solve one-variable, one-step equations and inequalities that represent problems, including geometric concepts
	• write corresponding real-world problems given one-variable, one-step equations or inequalities
	• represent solutions for one-variable, one-step equations and inequalities on number lines
	• write one-variable, one-step equations and inequalities to represent constraints or conditions within problems
	• represent a given situation using verbal descriptions, tables, graphs, and equations in the form $y = kx$ or $y = x + b$
	• write an equation that represents the relationship between independent and dependent quantities from a table
	• identify independent and dependent quantities from tables and graphs
	• solve real-world problems to find the whole given a part and the percent, to find the part given the whole and the percent, and to find the percent given the part and the whole, including the use of concrete and pictorial models
	• represent mathematical and real-world problems involving ratios and rates using scale factors, tables, graphs, and proportions

Algebra 12	Prerequisite Skills/Links to TEKS Vertical Alignment
	• apply qualitative and quantitative reasoning to solve prediction and comparison of real-world problems involving ratios and rates
	• compare two rules verbally, numerically, graphically, and symbolically in the form of $y = ax$ or $y = x + a$ in order to differentiate between additive and multiplicative relationships
	• recognize the difference between additive and multiplicative numerical patterns given in a table or graph
	• generate a numerical pattern when given a rule in the form $y = ax$ or $y = x + a$ and graph
	• represent and solve multi-step problems involving the four operations with whole numbers using equations with a letter standing for the unknown quantity
	• represent problems using an input-output table and numerical expressions to generate a number pattern that follows a given rule representing the relationship of the values in the resulting sequence and their position in the sequence
	• represent multi-step problems involving the four operations with whole numbers using strip diagrams and equations with a letter standing for the unknown quantity
	• represent real-world relationships using number pairs in a table and verbal descriptions
	• determine the unknown whole number in a multiplication or division equation relating three whole numbers when the unknown is either a missing factor or product
	• represent and solve one- and two-step multiplication and division problems within 100 using arrays, strip diagrams, and equations
	• represent one- and two- step problems involving addition and subtraction of whole numbers to 1,000 using pictorial models, number lines, and equations
	• represent and solve addition and subtraction word problems where unknowns may be any one of the terms in the problem
	• generate and solve problem situations for a given mathematical number sentence involving addition and subtraction of whole numbers within 1,000
	• determine the unknown whole number in an addition or subtraction equation when the unknown may be any one of the three or four terms in the equation
	• understand that the equal sign represents a relationship where expressions on each side of the equal sign represent the same value(s)
	• represent word problems involving addition and subtraction of whole numbers up to 20 using concrete and pictorial models and number sentences
	• generate and solve problem situations when given a number sentence involving addition or subtraction of numbers within 20
	Classification and patterns skills
	• recognize and create patterns

NOTE: Under each heading the prerequisite skills are arranged from the highest grade level to the lowest grade level.

STAAR Reporting Category 2 – Describing and Graphing Linear Functions, Equations, and Inequalities: The student will demonstrate an understanding of how to describe and graph linear functions, equations, and inequalities.

TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations	Essence of TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations
Algebra (3) Linear functions, equations, and inequalities. The student applies the mathematical process standards when using graphs of linear functions, key features, and related transformations to represent in multiple ways and solve, with and without technology, equations, inequalities, and systems of equations. The student is expected to (A) determine the slope of a line given a table of values, a graph, two points on the line, and an equation written in various forms, including $y = mx + b$, $Ax + By = C$, and $y - y_1 = m(x - x_1)$; Supporting Standard (B) calculate the rate of change of a linear function represented tabularly, graphically, or algebraically in context of mathematical and real-world problems; Readiness Standard (C) graph linear functions on the coordinate plane and identify key features, including x-intercept, y-intercept, zeros, and slope, in mathematical and real-world problems; Readiness Standard (D) graph the solution set of linear inequalities in two variables on the coordinate plane; Readiness Standard (E) determine the effects on the graph of the parent function $f(x) = x$ when $f(x)$ is replaced by $af(x)$, $f(x) + d$, $f(x - c)$, $f(bx)$ for specific values of a, b, c, and d; Supporting Standard (F) graph systems of two linear equations in two variables on the coordinate plane and determine the solutions if they exist; Supporting Standard (G) estimate graphically the solutions to systems of two linear equations with two variables in real-world problems; Supporting Standard (H) graph the solution set of systems of two linear inequalities in two variables on the coordinate plane. Supporting Standard	Determines key features or graphical solutions for linear functions. *Continued*

Algebra 3	Prerequisite Skills/Links to TEKS Vertical Alignment

Representing and Solving Algebraic Relationships
- identify and verify the values of *x* and *y* that simultaneously satisfy two linear equations in the form $y = mx + b$ from the intersections of the graphed equations
- model and solve one-variable equations with variables on both sides of the equal sign that represent mathematical and real-world problems using rational number coefficients and constants
- write a corresponding real-world problem when given a one-variable equation or inequality with variables on both sides of the equal sign using rational number coefficients and constants
- write one-variable equations or inequalities with variables on both sides that represent problems using rational number coefficients and constants
- write an equation in the form $y = mx + b$ to model a linear relationship between two quantities using verbal, numerical, tabular, and graphical representations
- identify examples of proportional and non-proportional functions that arise from mathematical and real-world problems
- identify functions using sets of ordered pairs, tables, mappings, and graphs
- distinguish between proportional and non-proportional situations using tables, graphs, and equations in the form $y = kx$ or $y = mx + b$, where $b \neq 0$
- solve problems involving direct variation
- represent linear non-proportional situations with tables, graphs, and equations in the form of $y = mx + b$, where $b \neq 0$
- represent linear proportional situations with tables, graphs, and equations in the form of $y = kx$
- use data from a table or graph to determine the rate of change or slope and *y*-intercept in mathematical and real-world problems
- graph proportional relationships, interpreting the unit rate as the slope of the line that models the relationship
- use similar right triangles to develop an understanding that slope, *m*, given as the rate comparing the change in *y*-values to the change in *x*-values, $(y_2 - y_1)/(x_2 - x_1)$, is the same for any two points (x_1, y_1) and (x_2, y_2) on the same line
- determine if the given value(s) make(s) one-variable, two-step equations and inequalities true
- model and solve one-variable, two-step equations and inequalities
- write a corresponding real-world problem given a one-variable, two-step equation or inequality
- represent solutions for one-variable, two-step equations and inequalities on number lines
- write one-variable, two-step equations and inequalities to represent constraints or conditions within problems
- represent linear relationships using verbal descriptions, tables, graphs, and equations that simplify to the form $y = mx + b$
- solve problems involving ratios, rates, and percents, including multi-step problems involving percent increase and percent decrease, and financial literacy problems
- determine the constant of proportionality *(k = y/x)* within mathematical and real-world problems
- calculate unit rates from rates in mathematical and real-world problems
- represent constant rates of change in mathematical and real-world problems given pictorial, tabular, verbal, numeric, graphical, and algebraic representations, including $d = rt$

Continued

Algebra 3	Prerequisite Skills/Links to TEKS Vertical Alignment
	- determine if the given value(s) make(s) one- variable, one-step equations or inequalities true - model and solve one- variable, one-step equations and inequalities that represent problems, including geometric concepts - write corresponding real- world problems given one-variable, one-step equations or inequalities - represent solutions for one-variable, one-step equations and inequalities on number lines - write one-variable, one-step equations and inequalities to represent constraints or conditions within problems - represent a given situation using verbal descriptions, tables, graphs, and equations in the form $y = kx$ or $y = x + b$ - write an equation that represents the relationship between independent and dependent quantities from a table - identify independent and dependent quantities from tables and graphs - solve real-world problems to find the whole given a part and the percent, to find the part given the whole and the percent, and to find the percent given the part and the whole, including the use of concrete and pictorial models - represent mathematical and real-world problems involving ratios and rates using scale factors, tables, graphs, and proportions - apply qualitative and quantitative reasoning to solve prediction and comparison of real-world problems involving ratios and rates - compare two rules verbally, numerically, graphically, and symbolically in the form of $y = ax$ or $y = x + a$ in order to differentiate between additive and multiplicative relationships - recognize the difference between additive and multiplicative numerical patterns given in a table or graph - generate a numerical pattern when given a rule in the form $y = ax$ or $y = x + a$ and graph - represent and solve multi-step problems involving the four operations with whole numbers using equations with a letter standing for the unknown quantity - represent problems using an input-output table and numerical expressions to generate a number pattern that follows a given rule representing the relationship of the values in the resulting sequence and their position in the sequence - represent multi-step problems involving the four operations with whole numbers using strip diagrams and equations with a letter standing for the unknown quantity - represent real-world relationships using number pairs in a table and verbal descriptions - determine the unknown whole number in a multiplication or division equation relating three whole numbers when the unknown is either a missing factor or product - represent and solve one- and two-step multiplication and division problems within 100 using arrays, strip diagrams, and equations - represent one- and two- step problems involving addition and subtraction of whole numbers to 1,000 using pictorial models, number lines, and equations - represent and solve addition and subtraction word problems where unknowns may be any one of the terms in the problem - generate and solve problem situations for a given mathematical number sentence involving addition and subtraction of whole numbers within 1,000 - determine the unknown whole number in an addition or subtraction equation when the unknown may be any one of the three or four terms in the equation

Continued

Algebra 3	Prerequisite Skills/Links to TEKS Vertical Alignment
	• understand that the equal sign represents a relationship where expressions on each side of the equal sign represent the same value(s) • represent word problems involving addition and subtraction of whole numbers up to 20 using concrete and pictorial models and number sentences • generate and solve problem situations when given a number sentence involving addition or subtraction of numbers within 20 **Classification and patterns skills** • recognize and create patterns

NOTE: Under each heading the prerequisite skills are arranged from the highest grade level to the lowest grade level.

STAAR Reporting Category 2 – Describing and Graphing Linear Functions, Equations, and Inequalities: The student will demonstrate an understanding of how to describe and graph linear functions, equations, and inequalities.	
TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations	**Essence of TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations**
Algebra (4) Linear functions, equations, and inequalities. The student applies the mathematical process standards to formulate statistical relationships and evaluate their reasonableness based on real-world data. The student is expected to (A) calculate, using technology, the correlation coefficient between two quantitative variables and interpret this quantity as a measure of the strength of the linear association; Supporting Standard (B) compare and contrast association and causation in real-world problems; Supporting Standard (C) write, with and without technology, linear functions that provide a reasonable fit to data to estimate solutions and make predictions for real-world problems. Supporting Standard	Uses linear equations to model or solve problems using real-world data.

Algebra 4	**Prerequisite Skills/Links to TEKS Vertical Alignment**

Representing and Solving Algebraic Relationships
- identify and verify the values of x and y that simultaneously satisfy two linear equations in the form $y = mx + b$ from the intersections of the graphed equations
- model and solve one- variable equations with variables on both sides of the equal sign that represent mathematical and real-world problems using rational number coefficients and constants
- write a corresponding real-world problem when given a one-variable equation or inequality with variables on both sides of the equal sign using rational number coefficients and constants
- write one-variable equations or inequalities with variables on both sides that represent problems using rational number coefficients and constants
- write an equation in the form $y = mx + b$ to model a linear relationship between two quantities using verbal, numerical, tabular, and graphical representations
- identify examples of proportional and non- proportional functions that arise from mathematical and real- world problems
- identify functions using sets of ordered pairs, tables, mappings, and graphs
- distinguish between proportional and non- proportional situations using tables, graphs, and equations in the form $y = kx$ or $y = mx + b$, where $b \neq 0$
- solve problems involving direct variation

Algebra 4	Prerequisite Skills/Links to TEKS Vertical Alignment
	- represent linear non- proportional situations with tables, graphs, and equations in the form of $y = mx + b$, where $b \neq 0$ - represent linear proportional situations with tables, graphs, and equations in the form of $y = kx$ - use data from a table or graph to determine the rate of change or slope and y-intercept in mathematical and real-world problems - graph proportional relationships, interpreting the unit rate as the slope of the line that models the relationship - use similar right triangles to develop an understanding that slope, m, given as the rate comparing the change in y-values to the change in x-values, $(y_2 - y_1)/(x_2 - x_1)$, is the same for any two points (x_1, y_1) and (x_2, y_2) on the same line - determine if the given value(s) make(s) one- variable, two-step equations and inequalities true - model and solve one- variable, two-step equations and inequalities - write a corresponding real-world problem given a one-variable, two-step equation or inequality - represent solutions for one-variable, two-step equations and inequalities on number lines - write one-variable, two- step equations and inequalities to represent constraints or conditions within problems - represent linear relationships using verbal descriptions, tables, graphs, and equations that simplify to the form $y = mx + b$ - solve problems involving ratios, rates, and percents, including multi-step problems involving percent increase and percent decrease, and financial literacy problems - determine the constant of proportionality *(k = y/x)* within mathematical and real-world problems - calculate unit rates from rates in mathematical and real-world problems - represent constant rates of change in mathematical and real-world problems given pictorial, tabular, verbal, numeric, graphical, and algebraic representations, including $d = rt$ - determine if the given value(s) make(s) one- variable, one-step equations or inequalities true - model and solve one- variable, one-step equations and inequalities that represent problems, including geometric concepts - write corresponding real- world problems given one-variable, one-step equations or inequalities - represent solutions for one-variable, one-step equations and inequalities on number lines - write one-variable, one-step equations and inequalities to represent constraints or conditions within problems - represent a given situation using verbal descriptions, tables, graphs, and equations in the form $y = kx$ or $y = x + b$ - write an equation that represents the relationship between independent and dependent quantities from a table - identify independent and dependent quantities from tables and graphs - solve real-world problems to find the whole given a part and the percent, to find the part given the whole and the percent, and to find the percent given the part and the whole, including the use of concrete and pictorial models - represent mathematical and real-world problems involving ratios and rates using scale factors, tables, graphs, and proportions - apply qualitative and quantitative reasoning to solve prediction and comparison of real-world problems involving ratios and rates - compare two rules verbally, numerically, graphically, and symbolically in the form of $y = ax$ or $y = x + a$ in order to differentiate between additive and multiplicative relationships *Continued*

Algebra 4	Prerequisite Skills/Links to TEKS Vertical Alignment
	- recognize the difference between additive and multiplicative numerical patterns given in a table or graph - generate a numerical pattern when given a rule in the form $y = ax$ or $y = x + a$ and graph - represent and solve multi-step problems involving the four operations with whole numbers using equations with a letter standing for the unknown quantity - represent problems using an input-output table and numerical expressions to generate a number pattern that follows a given rule representing the relationship of the values in the resulting sequence and their position in the sequence - represent multi-step problems involving the four operations with whole numbers using strip diagrams and equations with a letter standing for the unknown quantity - represent real-world relationships using number pairs in a table and verbal descriptions - determine the unknown whole number in a multiplication or division equation relating three whole numbers when the unknown is either a missing factor or product - represent and solve one- and two-step multiplication and division problems within 100 using arrays, strip diagrams, and equations - represent one- and two- step problems involving addition and subtraction of whole numbers to 1,000 using pictorial models, number lines, and equations - generate and solve problem situations for a given mathematical number sentence involving addition and subtraction of whole numbers within 1,000 - determine the unknown whole number in an addition or subtraction equation when the unknown may be any one of the three or four terms in the equation - understand that the equal sign represents a relationship where expressions on each side of the equal sign represent the same value(s) - represent word problems involving addition and subtraction of whole numbers up to 20 using concrete and pictorial models and number sentences - generate and solve problem situations when given a number sentence involving addition or subtraction of numbers within 20 **Classification and patterns skills** - recognize and create patterns *Using Data* - use a trend line that approximates the linear relationship between bivariate sets of data to make predictions - compare two populations based on data in random samples from these populations, including informal comparative inferences about differences between the two populations - use data from a random sample to make inferences about a population - compare two groups of numeric data using comparative dot plots or box plots by comparing their shapes, centers, and spreads - solve problems using data represented in bar graphs, dot plots, and circle graphs, including part-to- whole and part-to-part comparisons and equivalents - distinguish between situations that yield data with and without variability - interpret numeric data summarized in dot plots, stem-and-leaf plots, histograms, and box plots

Continued

Algebra 4	Prerequisite Skills/Links to TEKS Vertical Alignment
	• solve one- and two-step problems using data from a frequency table, dot plot, bar graph, stem-and-leaf plot, or scatterplot
	• solve one- and two-step problems using data in whole number, decimal, and fraction form in a frequency table, dot plot, or stem-and-leaf plot
	• solve one- and two-step problems using categorical data represented with a frequency table, dot plot, pictograph, or bar graph with scaled intervals
	• draw conclusions and make predictions from information in a graph
	• write and solve one-step word problems involving addition or subtraction using data represented within pictographs and bar graphs with intervals of one
	• draw conclusions and generate and answer questions using information from picture and bar-type graphs
	• draw conclusions from real-object and picture graphs
	Collecting and Representing Data
	• simulate generating random samples of the same size from a population with known characteristics to develop the notion of a random sample being representative of the population from which it was selected
	• determine the mean absolute deviation and use this quantity as a measure of the average distance data are from the mean using a data set of no more than 10 data points
	• construct a scatterplot and describe the observed data to address questions of association such as linear, non-linear, and no association between bivariate data
	• contrast bivariate sets of data that suggest a linear relationship with bivariate sets of data that do not suggest a linear relationship from a graphical representation
	• summarize categorical data with numerical and graphical summaries, including the mode, the percent of values in each category (relative frequency table), and the percent bar graph, and use these summaries to describe the data distribution
	• summarize numeric data with numerical summaries, including the mean and median (measures of center) and the range and interquartile range (IQR) (measures of spread), and use these summaries to describe the center, spread, and shape of the data distribution
	• use the graphical representation of numeric data to describe the center, spread, and shape of the data distribution
	• represent numeric data graphically, including dot plots, stem-and-leaf plots, histograms, and box plots
	• represent discrete paired data on a scatterplot
	• represent categorical data with bar graphs or frequency tables and numerical data, including data sets of measurements in fractions or decimals, with dot plots or stem-and-leaf plots
	• represent data on a frequency table, dot plot, or stem-and-leaf plot marked with whole numbers and fractions
	• summarize a data set with multiple categories using a frequency table, dot plot, pictograph, or bar graph with scaled intervals
	• organize a collection of data with up to four categories using pictographs and bar graphs with intervals of one or more
	• explain that the length of a bar in a bar graph or the number of pictures in a pictograph represents the number of data points for a given category

Algebra 4	Prerequisite Skills/Links to TEKS Vertical Alignment
	• use data to create picture and bar-type graphs • collect, sort, and organize data in up to three categories using models/ representations such as tally marks or T-charts • use data to create real- object and picture graphs • collect, sort, and organize data into two or three categories **Classification and patterns skills** • collect data and organize it in a graphic representation • sort objects that are the same and different into groups and use language to describe how the groups are similar and different

NOTE: Under each heading the prerequisite skills are arranged from the highest grade level to the lowest grade level.

STAAR Reporting Category 3 – Writing and Solving Linear Functions, Equations, and Inequalities: The student will demonstrate an understanding of how to write and solve linear functions, equations, and inequalities.	

TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations	**Essence of TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations**
Algebra (2) Linear functions, equations, and inequalities. The student applies the mathematical process standards when using properties of linear functions to write and represent in multiple ways, with and without technology, linear equations, inequalities, and systems of equations. The student is expected to (A) determine the domain and range of a linear function in mathematical problems; determine reasonable domain and range values for real-world situations, both continuous and discrete; and represent domain and range using inequalities; Readiness Standard (B) write linear equations in two variables in various forms, including $y = mx + b$, $Ax + By = C$, and $y - y_1 = m(x - x_1)$, given one point and the slope and given two points; Supporting Standard (C) write linear equations in two variables given a table of values, a graph, and a verbal description; Readiness Standard (D) write and solve equations involving direct variation; Supporting Standard (E) write the equation of a line that contains a given point and is parallel to a given line; Supporting Standard (F) write the equation of a line that contains a given point and is perpendicular to a given line; Supporting Standard (G) write an equation of a line that is parallel or perpendicular to the x-or y-axis and determine whether the slope of the line is zero or undefined; Supporting Standard (H) write linear inequalities in two variables given a table of values, a graph, and a verbal description; Supporting Standard (I) write systems of two linear equations given a table of values, a graph, and a verbal description. Readiness Standard	Determines linear equations using attributes or representations.

Continued

Algebra 2	Prerequisite Skills/Links to TEKS Vertical Alignment

Representing and Solving Algebraic Relationships

- identify and verify the values of x and y that simultaneously satisfy two linear equations in the form $y = mx + b$ from the intersections of the graphed equations
- model and solve one- variable equations with variables on both sides of the equal sign that represent mathematical and real-world problems using rational number coefficients and constants
- write a corresponding real-world problem when given a one-variable equation or inequality with variables on both sides of the equal sign using rational number coefficients and constants
- write one-variable equations or inequalities with variables on both sides that represent problems using rational number coefficients and constants
- write an equation in the form $y = mx + b$ to model a linear relationship between two quantities using verbal, numerical, tabular, and graphical representations
- identify examples of proportional and non- proportional functions that arise from mathematical and real- world problems
- identify functions using sets of ordered pairs, tables, mappings, and graphs
- distinguish between proportional and non- proportional situations using tables, graphs, and equations in the form $y = kx$ or $y = mx + b$, where $b \neq 0$
- solve problems involving direct variation
- represent linear non- proportional situations with tables, graphs, and equations in the form of $y = mx + b$, where $b \neq 0$
- represent linear proportional situations with tables, graphs, and equations in the form of $y = kx$
- use data from a table or graph to determine the rate of change or slope and y-intercept in mathematical and real-world problems
- graph proportional relationships, interpreting the unit rate as the slope of the line that models the relationship
- use similar right triangles to develop an understanding that slope, m, given as the rate comparing the change in y-values to the change in x-values, $(y_2 - y_1)/(x_2 - x_1)$, is the same for any two points (x_1, y_1) and (x_2, y_2) on the same line
- determine if the given value(s) make(s) one- variable, two-step equations and inequalities true
- model and solve one- variable, two-step equations and inequalities
- write a corresponding real-world problem given a one-variable, two-step equation or inequality
- represent solutions for one-variable, two-step equations and inequalities on number lines
- write one-variable, two- step equations and inequalities to represent constraints or conditions within problems
- represent linear relationships using verbal descriptions, tables, graphs, and equations that simplify to the form $y = mx + b$
- solve problems involving ratios, rates, and percents, including multi-step problems involving percent increase and percent decrease, and financial literacy problems
- determine the constant of proportionality $(k = y/x)$ within mathematical and real-world problems
- calculate unit rates from rates in mathematical and real-world problems
- represent constant rates of change in mathematical and real-world problems given pictorial, tabular, verbal, numeric, graphical, and algebraic representations, including $d = rt$

Algebra 2	**Prerequisite Skills/Links to TEKS Vertical Alignment**
	- determine if the given value(s) make(s) one- variable, one-step equations or inequalities true - model and solve one- variable, one-step equations and inequalities that represent problems, including geometric concepts - write corresponding real- world problems given one-variable, one-step equations or inequalities - represent solutions for one-variable, one-step equations and inequalities on number lines - write one-variable, one-step equations and inequalities to represent constraints or conditions within problems - represent a given situation using verbal descriptions, tables, graphs, and equations in the form $y = kx$ or $y = x + b$ - write an equation that represents the relationship between independent and dependent quantities from a table - identify independent and dependent quantities from tables and graphs - solve real-world problems to find the whole given a part and the percent, to find the part given the whole and the percent, and to find the percent given the part and the whole, including the use of concrete and pictorial models - represent mathematical and real-world problems involving ratios and rates using scale factors, tables, graphs, and proportions - apply qualitative and quantitative reasoning to solve prediction and comparison of real-world problems involving ratios and rates - compare two rules verbally, numerically, graphically, and symbolically in the form of $y = ax$ or $y = x + a$ in order to differentiate between additive and multiplicative relationships - recognize the difference between additive and multiplicative numerical patterns given in a table or graph - generate a numerical pattern when given a rule in the form $y = ax$ or $y = x + a$ and graph - represent and solve multi-step problems involving the four operations with whole numbers using equations with a letter standing for the unknown quantity - represent problems using an input-output table and numerical expressions to generate a number pattern that follows a given rule representing the relationship of the values in the resulting sequence and their position in the sequence - represent multi-step problems involving the four operations with whole numbers using strip diagrams and equations with a letter standing for the unknown quantity - represent real-world relationships using number pairs in a table and verbal descriptions - determine the unknown whole number in a multiplication or division equation relating three whole numbers when the unknown is either a missing factor or product - represent and solve one- and two-step multiplication and division problems within 100 using arrays, strip diagrams, and equations - represent one- and two- step problems involving addition and subtraction of whole numbers to 1,000 using pictorial models, number lines, and equations - represent and solve addition and subtraction word problems where unknowns may be any one of the terms in the problem - generate and solve problem situations for a given mathematical number sentence involving addition and subtraction of whole numbers within 1,000 - determine the unknown whole number in an addition or subtraction equation when the unknown may be any one of the three or four terms in the equation

Continued

Algebra 2	Prerequisite Skills/Links to TEKS Vertical Alignment
	• understand that the equal sign represents a relationship where expressions on each side of the equal sign represent the same value(s) • represent word problems involving addition and subtraction of whole numbers up to 20 using concrete and pictorial models and number sentences • generate and solve problem situations when given a number sentence involving addition or subtraction of numbers within 20 **Classification and patterns skills** • recognize and create patterns

NOTE: Under each heading the prerequisite skills are arranged from the highest grade level to the lowest grade level.

STAAR Reporting Category 3 – Writing and Solving Linear Functions, Equations, and Inequalities: **The student will demonstrate an understanding of how to write and solve linear functions, equations, and inequalities.**

TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations	Essence of TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations
Algebra (5) Linear functions, equations, and inequalities. The student applies the mathematical process standards to solve, with and without technology, linear equations and evaluate the reasonableness of their solutions. The student is expected to (A) solve linear equations in one variable, including those for which the application of the distributive property is necessary and for which variables are included on both sides; Readiness Standard (B) solve linear inequalities in one variable, including those for which the application of the distributive property is necessary and for which variables are included on both sides; Supporting Standard (C) solve systems of two linear equations with two variables for mathematical and real-world problems. Readiness Standard	Solves linear equations, inequalities, and systems.

Algebra 5	**Prerequisite Skills/Links to TEKS Vertical Alignment**

Representing and Solving Algebraic Relationships
- identify and verify the values of x and y that simultaneously satisfy two linear equations in the form $y = mx + b$ from the intersections of the graphed equations
- model and solve one- variable equations with variables on both sides of the equal sign that represent mathematical and real-world problems using rational number coefficients and constants
- write a corresponding real-world problem when given a one-variable equation or inequality with variables on both sides of the equal sign using rational number coefficients and constants
- write one-variable equations or inequalities with variables on both sides that represent problems using rational number coefficients and constants
- write an equation in the form $y = mx + b$ to model a linear relationship between two quantities using verbal, numerical, tabular, and graphical representations
- identify examples of proportional and non- proportional functions that arise from mathematical and real- world problems
- identify functions using sets of ordered pairs, tables, mappings, and graphs
- distinguish between proportional and non- proportional situations using tables, graphs, and equations in the form $y = kx$ or $y = mx + b$, where $b \neq 0$

Continued

Algebra 5	Prerequisite Skills/Links to TEKS Vertical Alignment
	- solve problems involving direct variation - represent linear non- proportional situations with tables, graphs, and equations in the form of $y = mx + b$, where $b \neq 0$ - represent linear proportional situations with tables, graphs, and equations in the form of $y = kx$ - use data from a table or graph to determine the rate of change or slope and y-intercept in mathematical and real-world problems - graph proportional relationships, interpreting the unit rate as the slope of the line that models the relationship - use similar right triangles to develop an understanding that slope, m, given as the rate comparing the change in y-values to the change in x-values, $(y_2 - y_1)/ (x_2 - x_1)$, is the same for any two points (x_1, y_1) and (x_2, y_2) on the same line - determine if the given value(s) make(s) one- variable, two-step equations and inequalities true - model and solve one- variable, two-step equations and inequalities - write a corresponding real-world problem given a one-variable, two-step equation or inequality - represent solutions for one-variable, two-step equations and inequalities on number lines - write one-variable, two- step equations and inequalities to represent constraints or conditions within problems - represent linear relationships using verbal descriptions, tables, graphs, and equations that simplify to the form $y = mx + b$ - solve problems involving ratios, rates, and percents, including multi-step problems involving percent increase and percent decrease, and financial literacy problems - determine the constant of proportionality $(k = y/x)$ within mathematical and real-world problems - calculate unit rates from rates in mathematical and real-world problems - represent constant rates of change in mathematical and real-world problems given pictorial, tabular, verbal, numeric, graphical, and algebraic representations, including $d = rt$ - determine if the given value(s) make(s) one- variable, one-step equations or inequalities true - model and solve one- variable, one-step equations and inequalities that represent problems, including geometric concepts - write corresponding real- world problems given one-variable, one-step equations or inequalities - represent solutions for one-variable, one-step equations and inequalities on number lines - write one-variable, one-step equations and inequalities to represent constraints or conditions within problems - represent a given situation using verbal descriptions, tables, graphs, and equations in the form $y = kx$ or $y = x + b$ - write an equation that represents the relationship between independent and dependent quantities from a table - identify independent and dependent quantities from tables and graphs - solve real-world problems to find the whole given a part and the percent, to find the part given the whole and the percent, and to find the percent given the part and the whole, including the use of concrete and pictorial models - represent mathematical and real-world problems involving ratios and rates using scale factors, tables, graphs, and proportions - apply qualitative and quantitative reasoning to solve prediction and comparison of real-world problems involving ratios and rates - compare two rules verbally, numerically, graphically, and symbolically in the form of $y = ax$ or $y = x + a$ in order to differentiate between additive and multiplicative relationships - recognize the difference between additive and multiplicative numerical patterns given in a table or graph

Continued

Algebra 5	Prerequisite Skills/Links to TEKS Vertical Alignment
	- generate a numerical pattern when given a rule in the form $y = ax$ or $y = x + a$ and graph - represent and solve multi-step problems involving the four operations with whole numbers using equations with a letter standing for the unknown quantity - represent problems using an input-output table and numerical expressions to generate a number pattern that follows a given rule representing the relationship of the values in the resulting sequence and their position in the sequence - represent multi-step problems involving the four operations with whole numbers using strip diagrams and equations with a letter standing for the unknown quantity - represent real-world relationships using number pairs in a table and verbal descriptions - determine the unknown whole number in a multiplication or division equation relating three whole numbers when the unknown is either a missing factor or product - represent and solve one- and two-step multiplication and division problems within 100 using arrays, strip diagrams, and equations - represent one- and two- step problems involving addition and subtraction of whole numbers to 1,000 using pictorial models, number lines, and equations - represent and solve addition and subtraction word problems where unknowns may be any one of the terms in the problem - generate and solve problem situations for a given mathematical number sentence involving addition and subtraction of whole numbers within 1,000 - determine the unknown whole number in an addition or subtraction equation when the unknown may be any one of the three or four terms in the equation - understand that the equal sign represents a relationship where expressions on each side of the equal sign represent the same value(s) - represent word problems involving addition and subtraction of whole numbers up to 20 using concrete and pictorial models and number sentences - generate and solve problem situations when given a number sentence involving addition or subtraction of numbers within 20 **Classification and patterns skills** - recognize and create patterns

NOTE: Under each heading the prerequisite skills are arranged from the highest grade level to the lowest grade level.

STAAR Reporting Category 4 – Quadratic Functions and Equations: **The student will demonstrate an understanding of how to describe, write, and solve quadratic functions and equations.**

TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations	Essence of TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations
Algebra (6) Quadratic functions and equations. The student applies the mathematical process standards when using properties of quadratic functions to write and represent in multiple ways, with and without technology, quadratic equations. The student is expected to (A) determine the domain and range of quadratic functions and represent the domain and range using inequalities; Readiness Standard (B) write equations of quadratic functions given the vertex and another point on the graph, write the equation in vertex form $(f(x) = a(x - h)^2 + k)$, and rewrite the equation from vertex form to standard form $(f(x) = ax^2 + bx + c)$; Supporting Standard (C) write quadratic functions when given real solutions and graphs of their related equations. Supporting Standard	Determines quadratic functions using graphs or attributes.

Algebra 6	Prerequisite Skills/Links to TEKS Vertical Alignment

Representing and Solving Algebraic Relationships
- identify and verify the values of x and y that simultaneously satisfy two linear equations in the form $y = mx + b$ from the intersections of the graphed equations
- model and solve one-variable equations with variables on both sides of the equal sign that represent mathematical and real-world problems using rational number coefficients and constants
- write a corresponding real-world problem when given a one-variable equation or inequality with variables on both sides of the equal sign using rational number coefficients and constants
- write one-variable equations or inequalities with variables on both sides that represent problems using rational number coefficients and constants
- write an equation in the form $y = mx + b$ to model a linear relationship between two quantities using verbal, numerical, tabular, and graphical representations
- identify examples of proportional and non-proportional functions that arise from mathematical and real-world problems
- identify functions using sets of ordered pairs, tables, mappings, and graphs
- distinguish between proportional and non-proportional situations using tables, graphs, and equations in the form $y = kx$ or $y = mx + b$, where $b \neq 0$

Continued

Algebra 6	Prerequisite Skills/Links to TEKS Vertical Alignment
	- solve problems involving direct variation - represent linear non- proportional situations with tables, graphs, and equations in the form of $y = mx + b$, where $b \neq 0$ - represent linear proportional situations with tables, graphs, and equations in the form of $y = kx$ - use data from a table or graph to determine the rate of change or slope and y-intercept in mathematical and real-world problems - graph proportional relationships, interpreting the unit rate as the slope of the line that models the relationship - use similar right triangles to develop an understanding that slope, m, given as the rate comparing the change in y-values to the change in x-values, $(y_2 - y_1)/ (x_2 - x_1)$, is the same for any two points (x_1, y_1) and (x_2, y_2) on the same line - determine if the given value(s) make(s) one- variable, two-step equations and inequalities true - model and solve one- variable, two-step equations and inequalities - write a corresponding real-world problem given a one-variable, two-step equation or inequality - represent solutions for one-variable, two-step equations and inequalities on number lines - write one-variable, two- step equations and inequalities to represent constraints or conditions within problems - represent linear relationships using verbal descriptions, tables, graphs, and equations that simplify to the form $y = mx + b$ - solve problems involving ratios, rates, and percents, including multi-step problems involving percent increase and percent decrease, and financial literacy problems - determine the constant of proportionality $(k = y/x)$ within mathematical and real-world problems - calculate unit rates from rates in mathematical and real-world problems - represent constant rates of change in mathematical and real-world problems given pictorial, tabular, verbal, numeric, graphical, and algebraic representations, including $d = rt$ - determine if the given value(s) make(s) one- variable, one-step equations or inequalities true - model and solve one- variable, one-step equations and inequalities that represent problems, including geometric concepts - write corresponding real- world problems given one-variable, one-step equations or inequalities - represent solutions for one-variable, one-step equations and inequalities on number lines - write one-variable, one-step equations and inequalities to represent constraints or conditions within problems - represent a given situation using verbal descriptions, tables, graphs, and equations in the form $y = kx$ or $y = x + b$ - write an equation that represents the relationship between independent and dependent quantities from a table - identify independent and dependent quantities from tables and graphs - solve real-world problems to find the whole given a part and the percent, to find the part given the whole and the percent, and to find the percent given the part and the whole, including the use of concrete and pictorial models - represent mathematical and real-world problems involving ratios and rates using scale factors, tables, graphs, and proportions - apply qualitative and quantitative reasoning to solve prediction and comparison of real-world problems involving ratios and rates - compare two rules verbally, numerically, graphically, and symbolically in the form of $y = ax$ or $y = x + a$ in order to differentiate between additive and multiplicative relationships

Continued

Algebra 6	Prerequisite Skills/Links to TEKS Vertical Alignment
	• recognize the difference between additive and multiplicative numerical patterns given in a table or graph • generate a numerical pattern when given a rule in the form $y = ax$ or $y = x + a$ and graph • represent and solve multi-step problems involving the four operations with whole numbers using equations with a letter standing for the unknown quantity • represent problems using an input-output table and numerical expressions to generate a number pattern that follows a given rule representing the relationship of the values in the resulting sequence and their position in the sequence • represent multi-step problems involving the four operations with whole numbers using strip diagrams and equations with a letter standing for the unknown quantity • represent real-world relationships using number pairs in a table and verbal descriptions • determine the unknown whole number in a multiplication or division equation relating three whole numbers when the unknown is either a missing factor or product • represent and solve one- and two-step multiplication and division problems within 100 using arrays, strip diagrams, and equations • represent one- and two- step problems involving addition and subtraction of whole numbers to 1,000 using pictorial models, number lines, and equations • represent and solve addition and subtraction word problems where unknowns may be any one of the terms in the problem • generate and solve problem situations for a given mathematical number sentence involving addition and subtraction of whole numbers within 1,000 • determine the unknown whole number in an addition or subtraction equation when the unknown may be any one of the three or four terms in the equation • understand that the equal sign represents a relationship where expressions on each side of the equal sign represent the same value(s) • represent word problems involving addition and subtraction of whole numbers up to 20 using concrete and pictorial models and number sentences • generate and solve problem situations when given a number sentence involving addition or subtraction of numbers within 20 **Classification and patterns skills** • recognize and create patterns

NOTE: Under each heading the prerequisite skills are arranged from the highest grade level to the lowest grade level.

STAAR Reporting Category 4 – Quadratic Functions and Equations: The student will demonstrate an understanding of how to describe, write, and solve quadratic functions and equations.

TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations	Essence of TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations
Algebra (7) Quadratic functions and equations. The student applies the mathematical process standards when using graphs of quadratic functions and their related transformations to represent in multiple ways and determine, with and without technology, the solutions to equations. The student is expected to (A) graph quadratic functions on the coordinate plane and use the graph to identify key attributes, if possible, including x-intercept, y-intercept, zeros, maximum value, minimum values, vertex, and the equation of the axis of symmetry; Readiness Standard (B) describe the relationship between the linear factors of quadratic expressions and the zeros of their associated quadratic functions; Supporting Standard (C) determine the effects on the graph of the parent function $f(x) = x^2$ when $f(x)$ is replaced by $af(x)$, $f(x) + d$, $f(x - c)$, $f(bx)$ for specific values of a, b, c, and d. Readiness Standard	Recognizes graphs and attributes of quadratic functions.

Algebra 7	Prerequisite Skills/Links to TEKS Vertical Alignment

Representing and Solving Algebraic Relationships
- identify and verify the values of x and y that simultaneously satisfy two linear equations in the form $y = mx + b$ from the intersections of the graphed equations
- model and solve one- variable equations with variables on both sides of the equal sign that represent mathematical and real-world problems using rational number coefficients and constants
- write a corresponding real-world problem when given a one-variable equation or inequality with variables on both sides of the equal sign using rational number coefficients and constants
- write one-variable equations or inequalities with variables on both sides that represent problems using rational number coefficients and constants
- write an equation in the form $y = mx + b$ to model a linear relationship between two quantities using verbal, numerical, tabular, and graphical representations
- identify examples of proportional and non- proportional functions that arise from mathematical and real- world problems
- identify functions using sets of ordered pairs, tables, mappings, and graphs

Algebra 7	Prerequisite Skills/Links to TEKS Vertical Alignment
	• distinguish between proportional and non-proportional situations using tables, graphs, and equations in the form $y = kx$ or $y = mx + b$, where $b \neq 0$
	• solve problems involving direct variation
	• represent linear non-proportional situations with tables, graphs, and equations in the form of $y = mx + b$, where $b \neq 0$
	• represent linear proportional situations with tables, graphs, and equations in the form of $y = kx$
	• use data from a table or graph to determine the rate of change or slope and y-intercept in mathematical and real-world problems
	• graph proportional relationships, interpreting the unit rate as the slope of the line that models the relationship
	• use similar right triangles to develop an understanding that slope, m, given as the rate comparing the change in y-values to the change in x-values, $(y_2 - y_1)/(x_2 - x_1)$, is the same for any two points (x_1, y_1) and (x_2, y_2) on the same line
	• determine if the given value(s) make(s) one-variable, two-step equations and inequalities true
	• model and solve one-variable, two-step equations and inequalities
	• write a corresponding real-world problem given a one-variable, two-step equation or inequality
	• represent solutions for one-variable, two-step equations and inequalities on number lines
	• write one-variable, two-step equations and inequalities to represent constraints or conditions within problems
	• represent linear relationships using verbal descriptions, tables, graphs, and equations that simplify to the form $y = mx + b$
	• solve problems involving ratios, rates, and percents, including multi-step problems involving percent increase and percent decrease, and financial literacy problems
	• determine the constant of proportionality $(k = y/x)$ within mathematical and real-world problems
	• calculate unit rates from rates in mathematical and real-world problems
	• represent constant rates of change in mathematical and real-world problems given pictorial, tabular, verbal, numeric, graphical, and algebraic representations, including $d = rt$
	• determine if the given value(s) make(s) one-variable, one-step equations or inequalities true
	• model and solve one-variable, one-step equations and inequalities that represent problems, including geometric concepts
	• write corresponding real-world problems given one-variable, one-step equations or inequalities
	• represent solutions for one-variable, one-step equations and inequalities on number lines
	• write one-variable, one-step equations and inequalities to represent constraints or conditions within problems
	• represent a given situation using verbal descriptions, tables, graphs, and equations in the form $y = kx$ or $y = x + b$
	• write an equation that represents the relationship between independent and dependent quantities from a table
	• identify independent and dependent quantities from tables and graphs
	• solve real-world problems to find the whole given a part and the percent, to find the part given the whole and the percent, and to find the percent given the part and the whole, including the use of concrete and pictorial models
	• represent mathematical and real-world problems involving ratios and rates using scale factors, tables, graphs, and proportions
	Continued

Algebra 7	Prerequisite Skills/Links to TEKS Vertical Alignment
	- apply qualitative and quantitative reasoning to solve prediction and comparison of real-world problems involving ratios and rates - compare two rules verbally, numerically, graphically, and symbolically in the form of $y = ax$ or $y = x + a$ in order to differentiate between additive and multiplicative relationships - recognize the difference between additive and multiplicative numerical patterns given in a table or graph - generate a numerical pattern when given a rule in the form $y = ax$ or $y = x + a$ and graph - represent and solve multi-step problems involving the four operations with whole numbers using equations with a letter standing for the unknown quantity - represent problems using an input-output table and numerical expressions to generate a number pattern that follows a given rule representing the relationship of the values in the resulting sequence and their position in the sequence - represent multi-step problems involving the four operations with whole numbers using strip diagrams and equations with a letter standing for the unknown quantity - represent real-world relationships using number pairs in a table and verbal descriptions - determine the unknown whole number in a multiplication or division equation relating three whole numbers when the unknown is either a missing factor or product - represent and solve one- and two-step multiplication and division problems within 100 using arrays, strip diagrams, and equations - represent one- and two- step problems involving addition and subtraction of whole numbers to 1,000 using pictorial models, number lines, and equations - represent and solve addition and subtraction word problems where unknowns may be any one of the terms in the problem - generate and solve problem situations for a given mathematical number sentence involving addition and subtraction of whole numbers within 1,000 - determine the unknown whole number in an addition or subtraction equation when the unknown may be any one of the three or four terms in the equation - understand that the equal sign represents a relationship where expressions on each side of the equal sign represent the same value(s) - represent word problems involving addition and subtraction of whole numbers up to 20 using concrete and pictorial models and number sentences - generate and solve problem situations when given a number sentence involving addition or subtraction of numbers within 20 **Classification and patterns skills** - recognize and create patterns

NOTE: Under each heading the prerequisite skills are arranged from the highest grade level to the lowest grade level.

STAAR Reporting Category 4 – Quadratic Functions and Equations: **The student will demonstrate an understanding of how to describe, write, and solve quadratic functions and equations.**	
TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations	**Essence of TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations**
Algebra (8) Quadratic functions and equations. The student applies the mathematical process standards to solve, with and without technology, quadratic equations and evaluate the reasonableness of their solutions. The student formulates statistical relationships and evaluates their reasonableness based on real-world data. The student is expected to (A) solve quadratic equations having real solutions by factoring, taking square roots, completing the square, and applying the quadratic formula; Readiness Standard (B) write, using technology, quadratic functions that provide a reasonable fit to data to estimate solutions and make predictions for real-world problems. Supporting Standard	Uses quadratic equations to model or solve problems using real-world data.

Algebra 8	Prerequisite Skills/Links to TEKS Vertical Alignment
	Representing and Solving Algebraic Relationships • identify and verify the values of x and y that simultaneously satisfy two linear equations in the form $y = mx + b$ from the intersections of the graphed equations • model and solve one-variable equations with variables on both sides of the equal sign that represent mathematical and real-world problems using rational number coefficients and constants • write a corresponding real-world problem when given a one-variable equation or inequality with variables on both sides of the equal sign using rational number coefficients and constants • write one-variable equations or inequalities with variables on both sides that represent problems using rational number coefficients and constants • write an equation in the form $y = mx + b$ to model a linear relationship between two quantities using verbal, numerical, tabular, and graphical representations • identify examples of proportional and non-proportional functions that arise from mathematical and real-world problems • identify functions using sets of ordered pairs, tables, mappings, and graphs • distinguish between proportional and non-proportional situations using tables, graphs, and equations in the form $y = kx$ or $y = mx + b$, where $b \neq 0$ • solve problems involving direct variation • represent linear non-proportional situations with tables, graphs, and equations in the form of $y = mx + b$, where $b \neq 0$ *Continued*

Algebra 8	Prerequisite Skills/Links to TEKS Vertical Alignment
	- represent linear proportional situations with tables, graphs, and equations in the form of $y = kx$ - use data from a table or graph to determine the rate of change or slope and y-intercept in mathematical and real-world problems - graph proportional relationships, interpreting the unit rate as the slope of the line that models the relationship - use similar right triangles to develop an understanding that slope, m, given as the rate comparing the change in y-values to the change in x-values, $(y_2 - y_1)/(x_2 - x_1)$, is the same for any two points (x_1, y_1) and (x_2, y_2) on the same line - determine if the given value(s) make(s) one- variable, two-step equations and inequalities true - model and solve one- variable, two-step equations and inequalities - write a corresponding real-world problem given a one-variable, two-step equation or inequality - represent solutions for one-variable, two-step equations and inequalities on number lines - write one-variable, two- step equations and inequalities to represent constraints or conditions within problems - represent linear relationships using verbal descriptions, tables, graphs, and equations that simplify to the form $y = mx + b$ - solve problems involving ratios, rates, and percents, including multi-step problems involving percent increase and percent decrease, and financial literacy problems - determine the constant of proportionality $(k = y/x)$ within mathematical and real-world problems - calculate unit rates from rates in mathematical and real-world problems - represent constant rates of change in mathematical and real-world problems given pictorial, tabular, verbal, numeric, graphical, and algebraic representations, including $d = rt$ - determine if the given value(s) make(s) one- variable, one-step equations or inequalities true - model and solve one- variable, one-step equations and inequalities that represent problems, including geometric concepts - write corresponding real- world problems given one-variable, one-step equations or inequalities - represent solutions for one-variable, one-step equations and inequalities on number lines - write one-variable, one-step equations and inequalities to represent constraints or conditions within problems - represent a given situation using verbal descriptions, tables, graphs, and equations in the form $y = kx$ or $y = x + b$ - write an equation that represents the relationship between independent and dependent quantities from a table - identify independent and dependent quantities from tables and graphs - solve real-world problems to find the whole given a part and the percent, to find the part given the whole and the percent, and to find the percent given the part and the whole, including the use of concrete and pictorial models - represent mathematical and real-world problems involving ratios and rates using scale factors, tables, graphs, and proportions - apply qualitative and quantitative reasoning to solve prediction and comparison of real-world problems involving ratios and rates - compare two rules verbally, numerically, graphically, and symbolically in the form of $y = ax$ or $y = x + a$ in order to differentiate between additive and multiplicative relationships - recognize the difference between additive and multiplicative numerical patterns given in a table or graph

Continued

Algebra 8	Prerequisite Skills/Links to TEKS Vertical Alignment
	• generate a numerical pattern when given a rule in the form $y = ax$ or $y = x + a$ and graph
	• represent and solve multi-step problems involving the four operations with whole numbers using equations with a letter standing for the unknown quantity
	• represent problems using an input-output table and numerical expressions to generate a number pattern that follows a given rule representing the relationship of the values in the resulting sequence and their position in the sequence
	• represent multi-step problems involving the four operations with whole numbers using strip diagrams and equations with a letter standing for the unknown quantity
	• represent real-world relationships using number pairs in a table and verbal descriptions
	• determine the unknown whole number in a multiplication or division equation relating three whole numbers when the unknown is either a missing factor or product
	• represent and solve one- and two-step multiplication and division problems within 100 using arrays, strip diagrams, and equations
	• represent one- and two- step problems involving addition and subtraction of whole numbers to 1,000 using pictorial models, number lines, and equations
	• represent and solve addition and subtraction word problems where unknowns may be any one of the terms in the problem
	• generate and solve problem situations for a given mathematical number sentence involving addition and subtraction of whole numbers within 1,000
	• determine the unknown whole number in an addition or subtraction equation when the unknown may be any one of the three or four terms in the equation
	• understand that the equal sign represents a relationship where expressions on each side of the equal sign represent the same value(s)
	• represent word problems involving addition and subtraction of whole numbers up to 20 using concrete and pictorial models and number sentences
	• generate and solve problem situations when given a number sentence involving addition or subtraction of numbers within 20
	Classification and patterns skills
	• recognize and create patterns
	Using Data
	• use a trend line that approximates the linear relationship between bivariate sets of data to make predictions
	• compare two populations based on data in random samples from these populations, including informal comparative inferences about differences between the two populations
	• use data from a random sample to make inferences about a population
	• compare two groups of numeric data using comparative dot plots or box plots by comparing their shapes, centers, and spreads
	• solve problems using data represented in bar graphs, dot plots, and circle graphs, including part-to- whole and part-to-part comparisons and equivalents
	• distinguish between situations that yield data with and without variability
	• interpret numeric data summarized in dot plots, stem-and-leaf plots, histograms, and box plots

Continued

Algebra 8	Prerequisite Skills/Links to TEKS Vertical Alignment

- solve one- and two-step problems using data from a frequency table, dot plot, bar graph, stem-and-leaf plot, or scatterplot
- solve one- and two-step problems using data in whole number, decimal, and fraction form in a frequency table, dot plot, or stem-and-leaf plot
- solve one- and two-step problems using categorical data represented with a frequency table, dot plot, pictograph, or bar graph with scaled intervals
- draw conclusions and make predictions from information in a graph
- write and solve one-step word problems involving addition or subtraction using data represented within pictographs and bar graphs with intervals of one
- draw conclusions and generate and answer questions using information from picture and bar-type graphs
- draw conclusions from real-object and picture graphs

Collecting and Representing Data

- simulate generating random samples of the same size from a population with known characteristics to develop the notion of a random sample being representative of the population from which it was selected
- determine the mean absolute deviation and use this quantity as a measure of the average distance data are from the mean using a data set of no more than 10 data points
- construct a scatterplot and describe the observed data to address questions of association such as linear, non-linear, and no association between bivariate data
- contrast bivariate sets of data that suggest a linear relationship with bivariate sets of data that do not suggest a linear relationship from a graphical representation
- summarize categorical data with numerical and graphical summaries, including the mode, the percent of values in each category (relative frequency table), and the percent bar graph, and use these summaries to describe the data distribution
- summarize numeric data with numerical summaries, including the mean and median (measures of center) and the range and interquartile range (IQR) (measures of spread), and use these summaries to describe the center, spread, and shape of the data distribution
- use the graphical representation of numeric data to describe the center, spread, and shape of the data distribution
- represent numeric data graphically, including dot plots, stem-and-leaf plots, histograms, and box plots
- represent discrete paired data on a scatterplot
- represent categorical data with bar graphs or frequency tables and numerical data, including data sets of measurements in fractions or decimals, with dot plots or stem-and-leaf plots
- represent data on a frequency table, dot plot, or stem-and-leaf plot marked with whole numbers and fractions
- summarize a data set with multiple categories using a frequency table, dot plot, pictograph, or bar graph with scaled intervals

Continued

Algebra 8	Prerequisite Skills/Links to TEKS Vertical Alignment
	- organize a collection of data with up to four categories using pictographs and bar graphs with intervals of one or more - explain that the length of a bar in a bar graph or the number of pictures in a pictograph represents the number of data points for a given category - use data to create picture and bar-type graphs - collect, sort, and organize data in up to three categories using models/ representations such as tally marks or T-charts - use data to create real- object and picture graphs - collect, sort, and organize data into two or three categories **Classification and patterns skills** - collect data and organize it in a graphic representation - sort objects that are the same and different into groups and use language to describe how the groups are similar and different

NOTE: Under each heading the prerequisite skills are arranged from the highest grade level to the lowest grade level.

STAAR Reporting Category 5 – Exponential Functions and Equations: **The student will demonstrate an understanding of how to describe and write exponential functions and equations.**

TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations	Essence of TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations
Algebra (9) Exponential functions and equations. The student applies the mathematical process standards when using properties of exponential functions and their related transformations to write, graph, and represent in multiple ways exponential equations and evaluate, with and without technology, the reasonableness of their solutions. The student formulates statistical relationships and evaluates their reasonableness based on real-world data. The student is expected to (A) determine the domain and range of exponential functions of the form $f(x) = ab^x$ and represent the domain and range using inequalities; Supporting Standard (B) interpret the meaning of the values of a and b in exponential functions of the form $f(x) = ab^x$ in real-world problems; Supporting Standard (C) write exponential functions in the form $f(x) = ab^x$ (where b is a rational number) to describe problems arising from mathematical and real-world situations, including growth and decay; Readiness Standard (D) graph exponential functions that model growth and decay and identify key features, including y-intercept and asymptote, in mathematical and real-world problems; Readiness Standard (E) write, using technology, exponential functions that provide a reasonable fit to data and make predictions for real-world problems. Supporting Standard	Uses exponential functions to model or solve problems using real-world data.

Continued

Algebra 9	Prerequisite Skills/Links to TEKS Vertical Alignment

Representing and Solving Algebraic Relationships
- identify and verify the values of *x* and *y* that simultaneously satisfy two linear equations in the form $y = mx + b$ from the intersections of the graphed equations
- model and solve one- variable equations with variables on both sides of the equal sign that represent mathematical and real-world problems using rational number coefficients and constants
- write a corresponding real-world problem when given a one-variable equation or inequality with variables on both sides of the equal sign using rational number coefficients and constants
- write one-variable equations or inequalities with variables on both sides that represent problems using rational number coefficients and constants
- write an equation in the form $y = mx + b$ to model a linear relationship between two quantities using verbal, numerical, tabular, and graphical representations
- identify examples of proportional and non- proportional functions that arise from mathematical and real- world problems
- identify functions using sets of ordered pairs, tables, mappings, and graphs
- distinguish between proportional and non- proportional situations using tables, graphs, and equations in the form $y = kx$ or $y = mx + b$, where $b \neq 0$
- solve problems involving direct variation
- represent linear non- proportional situations with tables, graphs, and equations in the form of $y = mx + b$, where $b \neq 0$
- represent linear proportional situations with tables, graphs, and equations in the form of $y = kx$
- use data from a table or graph to determine the rate of change or slope and *y*-intercept in mathematical and real-world problems
- graph proportional relationships, interpreting the unit rate as the slope of the line that models the relationship
- use similar right triangles to develop an understanding that slope, *m*, given as the rate comparing the change in *y*-values to the change in *x*-values, $(y_2 - y_1)/ (x_2 - x_1)$, is the same for any two points (x_1, y_1) and (x_2, y_2) on the same line
- determine if the given value(s) make(s) one- variable, two-step equations and inequalities true
- model and solve one- variable, two-step equations and inequalities
- write a corresponding real-world problem given a one-variable, two-step equation or inequality
- represent solutions for one-variable, two-step equations and inequalities on number lines
- write one-variable, two- step equations and inequalities to represent constraints or conditions within problems
- represent linear relationships using verbal descriptions, tables, graphs, and equations that simplify to the form $y = mx + b$
- solve problems involving ratios, rates, and percents, including multi-step problems involving percent increase and percent decrease, and financial literacy problems
- determine the constant of proportionality *(k = y/x)* within mathematical and real-world problems
- calculate unit rates from rates in mathematical and real-world problems
- represent constant rates of change in mathematical and real-world problems given pictorial, tabular, verbal, numeric, graphical, and algebraic representations, including $d = rt$

Continued

Algebra 9	Prerequisite Skills/Links to TEKS Vertical Alignment
	• determine if the given value(s) make(s) one- variable, one-step equations or inequalities true

• determine if the given value(s) make(s) one- variable, one-step equations or inequalities true
• model and solve one- variable, one-step equations and inequalities that represent problems, including geometric concepts
• write corresponding real- world problems given one-variable, one-step equations or inequalities
• represent solutions for one-variable, one-step equations and inequalities on number lines
• write one-variable, one-step equations and inequalities to represent constraints or conditions within problems
• represent a given situation using verbal descriptions, tables, graphs, and equations in the form $y = kx$ or $y = x + b$
• write an equation that represents the relationship between independent and dependent quantities from a table
• identify independent and dependent quantities from tables and graphs
• solve real-world problems to find the whole given a part and the percent, to find the part given the whole and the percent, and to find the percent given the part and the whole, including the use of concrete and pictorial models
• represent mathematical and real-world problems involving ratios and rates using scale factors, tables, graphs, and proportions
• apply qualitative and quantitative reasoning to solve prediction and comparison of real-world problems involving ratios and rates
• compare two rules verbally, numerically, graphically, and symbolically in the form of $y = ax$ or $y = x + a$ in order to differentiate between additive and multiplicative relationships
• recognize the difference between additive and multiplicative numerical patterns given in a table or graph
• generate a numerical pattern when given a rule in the form $y = ax$ or $y = x + a$ and graph
• represent and solve multi-step problems involving the four operations with whole numbers using equations with a letter standing for the unknown quantity
• represent problems using an input-output table and numerical expressions to generate a number pattern that follows a given rule representing the relationship of the values in the resulting sequence and their position in the sequence
• represent multi-step problems involving the four operations with whole numbers using strip diagrams and equations with a letter standing for the unknown quantity
• represent real-world relationships using number pairs in a table and verbal descriptions
• determine the unknown whole number in a multiplication or division equation relating three whole numbers when the unknown is either a missing factor or product
• represent and solve one- and two-step multiplication and division problems within 100 using arrays, strip diagrams, and equations
• represent one- and two- step problems involving addition and subtraction of whole numbers to 1,000 using pictorial models, number lines, and equations
• represent and solve addition and subtraction word problems where unknowns may be any one of the terms in the problem
• generate and solve problem situations for a given mathematical number sentence involving addition and subtraction of whole numbers within 1,000
• determine the unknown whole number in an addition or subtraction equation when the unknown may be any one of the three or four terms in the equation

Continued

Algebra 9	Prerequisite Skills/Links to TEKS Vertical Alignment
	• understand that the equal sign represents a relationship where expressions on each side of the equal sign represent the same value(s) • represent word problems involving addition and subtraction of whole numbers up to 20 using concrete and pictorial models and number sentences • generate and solve problem situations when given a number sentence involving addition or subtraction of numbers within 20 **Classification and patterns skills** • recognize and create patterns *Using Data* • use a trend line that approximates the linear relationship between bivariate sets of data to make predictions • compare two populations based on data in random samples from these populations, including informal comparative inferences about differences between the two populations • use data from a random sample to make inferences about a population • compare two groups of numeric data using comparative dot plots or box plots by comparing their shapes, centers, and spreads • solve problems using data represented in bar graphs, dot plots, and circle graphs, including part-to- whole and part-to-part comparisons and equivalents • distinguish between situations that yield data with and without variability • interpret numeric data summarized in dot plots, stem-and-leaf plots, histograms, and box plots • solve one- and two-step problems using data from a frequency table, dot plot, bar graph, stem-and-leaf plot, or scatterplot • solve one- and two-step problems using data in whole number, decimal, and fraction form in a frequency table, dot plot, or stem-and- leaf plot • solve one- and two-step problems using categorical data represented with a frequency table, dot plot, pictograph, or bar graph with scaled intervals • draw conclusions and make predictions from information in a graph • write and solve one-step word problems involving addition or subtraction using data represented within pictographs and bar graphs with intervals of one • draw conclusions and generate and answer questions using information from picture and bar-type graphs • draw conclusions from real-object and picture graphs *Collecting and Representing Data* • simulate generating random samples of the same size from a population with known characteristics to develop the notion of a random sample being representative of the population from which it was selected • determine the mean absolute deviation and use this quantity as a measure of the average distance data are from the mean using a data set of no more than 10 data points • construct a scatterplot and describe the observed data to address questions of association such as linear, non-linear, and no association between bivariate data

Algebra 9	Prerequisite Skills/Links to TEKS Vertical Alignment
	• contrast bivariate sets of data that suggest a linear relationship with bivariate sets of data that do not suggest a linear relationship from a graphical representation • summarize categorical data with numerical and graphical summaries, including the mode, the percent of values in each category (relative frequency table), and the percent bar graph, and use these summaries to describe the data distribution • summarize numeric data with numerical summaries, including the mean and median (measures of center) and the range and interquartile range (IQR) (measures of spread), and use these summaries to describe the center, spread, and shape of the data distribution • use the graphical representation of numeric data to describe the center, spread, and shape of the data distribution • represent numeric data graphically, including dot plots, stem-and-leaf plots, histograms, and box plots • represent discrete paired data on a scatterplot • represent categorical data with bar graphs or frequency tables and numerical data, including data sets of measurements in fractions or decimals, with dot plots or stem-and-leaf plots • represent data on a frequency table, dot plot, or stem-and-leaf plot marked with whole numbers and fractions • summarize a data set with multiple categories using a frequency table, dot plot, pictograph, or bar graph with scaled intervals • organize a collection of data with up to four categories using pictographs and bar graphs with intervals of one or more • explain that the length of a bar in a bar graph or the number of pictures in a pictograph represents the number of data points for a given category • use data to create picture and bar-type graphs • collect, sort, and organize data in up to three categories using models/ representations such as tally marks or T-charts • use data to create real- object and picture graphs • collect, sort, and organize data into two or three categories **Classification and patterns skills** • collect data and organize it in a graphic representation • sort objects that are the same and different into groups and use language to describe how the groups are similar and different

NOTE: Under each heading the prerequisite skills are arranged from the highest grade level to the lowest grade level.

Mathematical Process Standards – Mathematical process standards will not be listed under a separate reporting category. Instead, they will be incorporated into test questions across reporting categories since the application of mathematical process standards is part of each knowledge statement.

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TEKS Knowledge and Skills Statement/STAAR-Tested Student Expectations

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(A.1) **Mathematical process standards.** The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to

(A) apply mathematics to problems arising in everyday life, society, and the workplace;

(B) use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;

(C) select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems;

(D) communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate;

(E) create and use representations to organize, record, and communicate mathematical ideas;

(F) analyze mathematical relationships to connect and communicate mathematical ideas; and

(G) display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication.

A.1	Prerequisite Skills/Links to TEKS Vertical Alignment
	- display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication. - analyze mathematical relationships to connect and communicate mathematical ideas - create and use representations to organize, record, and communicate mathematical ideas - communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate - select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems - use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution - apply mathematics to problems arising in everyday life, society, and the workplace

NOTE: Under each heading the prerequisite skills are arranged from the highest grade level to the lowest grade level.